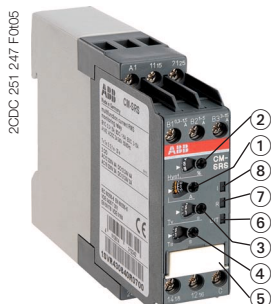


# Measuring and monitoring relays CM-SRS.M

## Multifunctional current monitoring relays, single-phase AC/DC

### Data sheet



**CM-SRS.M**

- ① Threshold value adjustment (MIN = Default)
- ② Hysteresis adjustment (MIN = Default)
- ③ Adjustment of the tripping delay  $T_V$  (MIN = Default)
- ④ Adjustment of the start-up delay  $T_S$  (MIN = Default)
- ⑤ DIP switches (see DIP switch functions)
- ⑥ U/T: green LED - control supply voltage, timing
- ⑦ R: yellow LED - relay status
- ⑧ I: red LED - over- / undercurrent

#### Characteristics

- Monitoring of DC and AC currents
- RMS measuring principle
- One device includes 3 measuring ranges
- Over- or undercurrent monitoring configurable
- Open- or closed-circuit principle configurable
- Latching function configurable
- Hysteresis adjustable from 3-30 %
- Start-up delay  $T_S$  adjustable 0; 0.1-30 s
- Tripping delay  $T_V$  adjustable 0; 0.1-30 s
- 2 c/o contacts
- 22.5 mm width
- 3 LEDs for status indication

**CM-SRS.M1:** 3 mA - 1 A  
**CM-SRS.M2:** 0.3-15 A

#### Approvals

- UL 508, CAN/CSA C22.2 No. 14
- GL (pending)
- GOST
- CB Scheme
- CCC
- RMRS

#### Marks

- CE
- C-Tick

#### Order data

Type	Control supply voltage	Order code
Measuring range: 3-30 mA; 10-100 mA; 0,1-1 A		
<b>CM-SRS.M1</b>	24-240 V AC/DC	<b>1SVR 430 840 R0600</b>
Measuring range: 0,3-1,5 A; 1-5 A; 3-15 A		
<b>CM-SRS.M2</b>	24-240 V AC/DC	<b>1SVR 430 840 R0700</b>

#### Order data (Accessories)

Type	Description	Order code
<b>ADP.01</b>	Adapter for screw mounting	<b>1SVR 430 029 R0100</b>
<b>MAR.01</b>	Marker label	<b>1SVR 366 017 R0100</b>
<b>COV.01</b>	Sealable transparent cover	<b>1SVR 430 005 R0100</b>

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# Measuring and monitoring relays CM-SRS.M

## Multifunctional current monitoring relays, single-phase AC/DC

### Data sheet

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#### Application

Depending on the configuration, the multifunctional current monitoring relays **CM-SRS.M** can be used for over-  or undercurrent monitoring  in single-phase AC and/or DC systems. Open  or closed-circuit principle  are configurable.

#### Operating mode

The CM-SRS.M has 2 c/o contacts. There are 2 versions available, CM-SRS.M1 with 3 current measuring ranges: 3-30 mA, 10-100 mA, and 0.1-1 A; and CM-SRS.M2 with ranges: 0.3-1.5 A, 1-5 A, and 3-15 A. The measuring range is selected by connecting the monitored wire to the corresponding terminal B1/B2/B3-C.

The unit is adjusted with potentiometers and switches on the top of the unit. The selection of: over-  or undercurrent monitoring , open  - or closed-circuit principle , and latching function ON  or  OFF is made with DIP switches. A potentiometer, with direct reading scale, allows the adjustment of the threshold value I. There are also adjustments for hysteresis %, the tripping delay  $T_V$  and the start-up delay  $T_S$ . The hysteresis % is adjustable within a range of 3 to 30 % of the threshold value. The tripping delay  $T_V$  and the start-up delay  $T_S$  are adjustable over a range of instantaneous to a 30 s delay.

# Measuring and monitoring relays CM-SRS.M


## Multifunctional current monitoring relays, single-phase AC/DC


### Data sheet

#### Function diagrams

##### Overcurrent monitoring without latching


###### Open-circuit principle


The current to be monitored (measured value) is applied to terminals **B1/B2/B3-C**. Applying supply voltage to terminals **A1-A2** begins the start-up delay  $T_s$ . The green LED flashes  during the start-up delay  $T_s$  and then turns steady. During the start-up delay  $T_s$  overcurrent is only displayed by glowing of the red LED.

If the measured value exceeds the adjusted threshold value, when  $T_s$  is complete, the tripping delay  $T_v$  starts and the red LED glows. Timing of  $T_v$  is displayed by the flashing  green LED. When  $T_v$  is complete and the measured value still exceeds the threshold value minus the adjusted hysteresis, the output relays energize and the yellow LED (relay energized) glows.

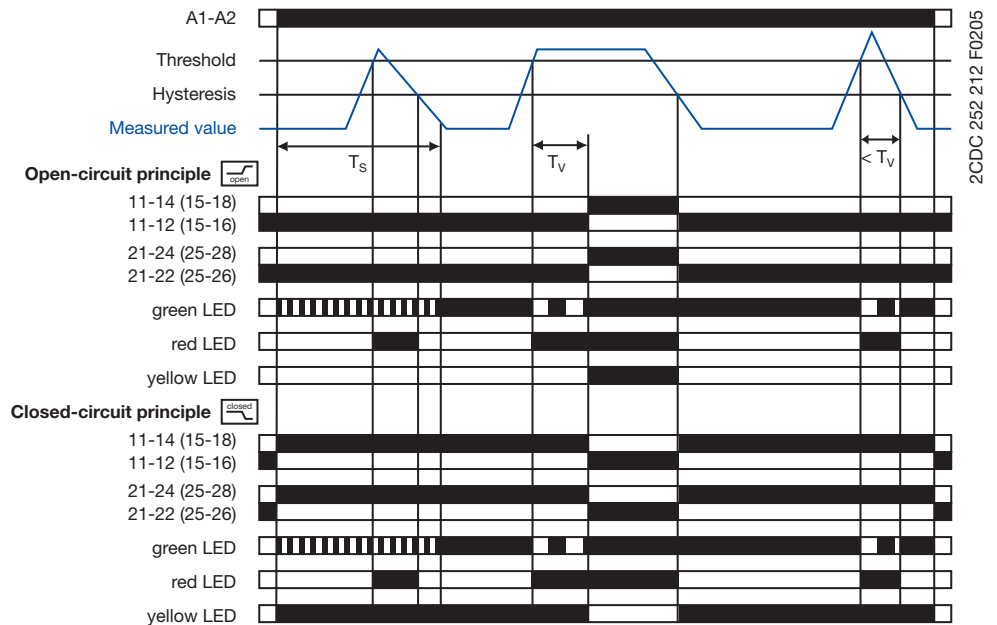
If the measured value decreases below the threshold value minus the hysteresis, the output relays de-energize and the red and yellow LEDs turn off. If supply voltage is interrupted, the green LED turns off.

###### Closed-circuit principle

The current to be monitored (measured value) is applied to terminals **B1/B2/B3-C**. When supply voltage is applied to terminals **A1-A2**, the start-up delay  $T_s$  begins, the output relays energize and the yellow LED (relays energized) glows. The green LED flashes  during the start-up delay  $T_s$  and then turns steady. During the start-up delay  $T_s$  overcurrent is only displayed by glowing of the red LED.

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If the measured value decreases below the threshold value minus the hysteresis, the output relays re-energize, the yellow LEDs glows and the red LED turns off. If supply voltage is interrupted, the output relays de-energize and the green and yellow LEDs turn off.





# Measuring and monitoring relays CM-SRS.M



## Multifunctional current monitoring relays, single-phase AC/DC

### Data sheet

#### Undercurrent monitoring without latching



##### Open-circuit principle



The current to be monitored (measured value) is applied to terminals **B1/B2/B3-C**. Applying supply voltage to terminals **A1-A2** begins the start-up delay  $T_S$ . The green LED flashes  during the start-up delay  $T_S$  and then turns steady. During the start-up delay  $T_S$  undercurrent is only displayed by flashing  of the red LED.

If the measured value decreases below the adjusted threshold value, when  $T_S$  is complete, the tripping delay  $T_V$  starts and the red LED flashes . Timing of  $T_V$  is displayed by the flashing  green LED. When  $T_V$  is complete and the measured value is still below the threshold value plus the adjusted hysteresis, the output relays energize and the yellow LED (relays energized) turns off.

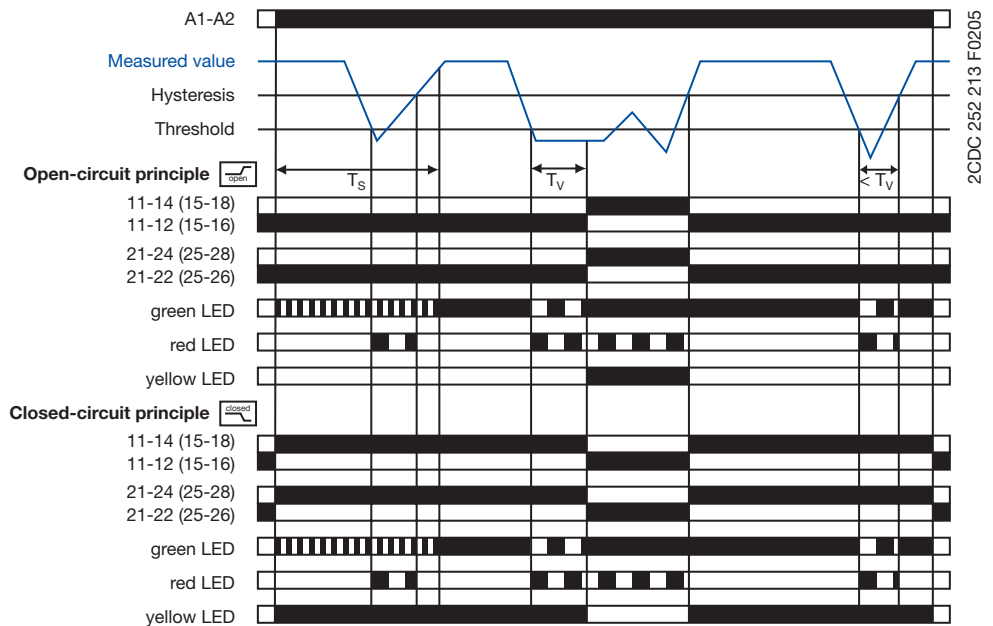
If the measured value exceeds the threshold value plus the hysteresis, the output relays de-energize and the red and yellow LEDs turn off. If supply voltage is interrupted, the green LED turns off.

##### Closed-circuit principle

The current to be monitored (measured value) is applied to terminals **B1/B2/B3-C**. When supply voltage is applied to terminals **A1-A2**, the start-up delay  $T_S$  begins, the output relays energize and the yellow LED (relays energized) glows. The green LED flashes  during the start-up delay  $T_S$  and then turns steady. During the start-up delay  $T_S$  undercurrent is only displayed by flashing  of the red LED.

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If the measured value exceeds the threshold value plus the hysteresis, the output relays re-energize, the yellow LEDs glows and the red LED turns off. If supply voltage is interrupted, the output relays de-energize and the green and yellow LEDs turn off.



# Measuring and monitoring relays CM-SRS.M

## Multifunctional current monitoring relays, single-phase AC/DC

### Data sheet

#### Overcurrent monitoring with latching

##### Open-circuit principle

The current to be monitored (measured value) is applied to terminals **B1/B2/B3-C**. Applying supply voltage to terminals **A1-A2** begins the start-up delay  $T_s$ . The green LED flashes during the start-up delay  $T_s$  and then turns steady. During the start-up delay  $T_s$  overcurrent is only displayed by glowing of the red LED.

If the measured value exceeds the adjusted threshold value, when  $T_s$  is complete, the tripping delay  $T_v$  starts and the red LED glows. Timing of  $T_v$  is displayed by the flashing green LED. When  $T_v$  is complete and the measured value still exceeds the threshold value minus the adjusted hysteresis, the output relays energize and the yellow LED (relay energized) flashes.

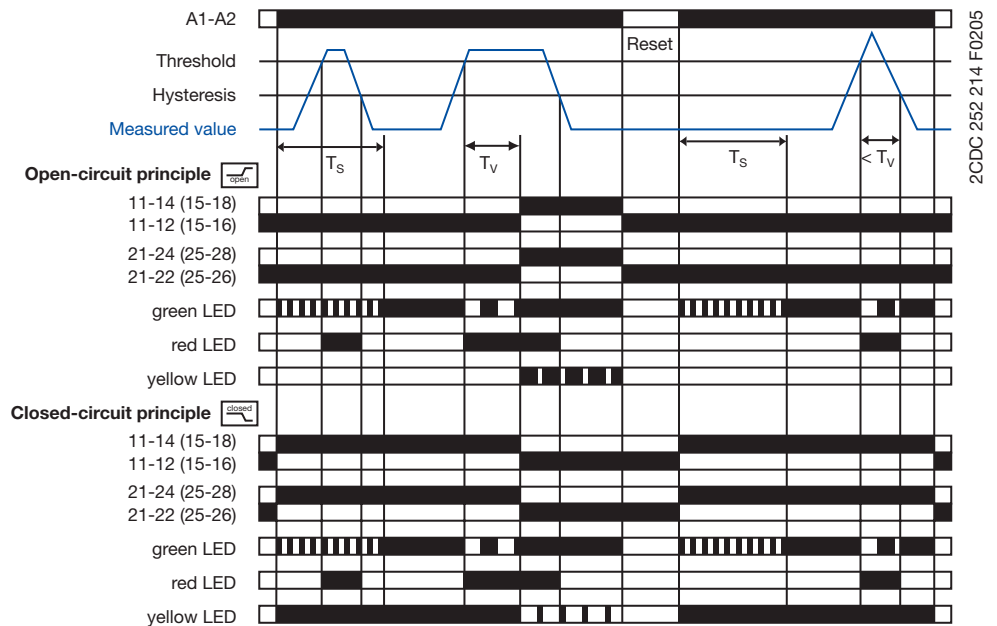
If the measured value decreases below the threshold value minus the hysteresis, the red LED turns off. The output relays remain energized (latching function). If supply voltage is interrupted (reset), the output relays de-energize and the green and yellow LEDs turn off.

##### Closed-circuit principle

The current to be monitored (measured value) is applied to terminals **B1/B2/B3-C**. When supply voltage is applied to terminals **A1-A2**, the start-up delay  $T_s$  begins, the output relays energize and the yellow LED (relays energized) glows. The green LED flashes during the start-up delay  $T_s$  and then turns steady. During the start-up delay  $T_s$  overcurrent is only displayed by glowing of the red LED.

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If the measured value decreases below the threshold value minus the hysteresis, the red LED turns off. The output relays remain de-energized (latching function). If supply voltage is interrupted (reset), the green and yellow LEDs turn off. The output relays energize again when supply voltage is re-applied.





# Measuring and monitoring relays CM-SRS.M




## Multifunctional current monitoring relays, single-phase AC/DC

### Data sheet

#### Undercurrent monitoring with latching



##### Open-circuit principle




The current to be monitored (measured value) is applied to terminals **B1/B2/B3-C**. Applying supply voltage to terminals **A1-A2** begins the start-up delay  $T_s$ . The green LED flashes  during the start-up delay  $T_s$  and then turns steady. During the start-up delay  $T_s$  undercurrent is only displayed by flashing  of the red LED.

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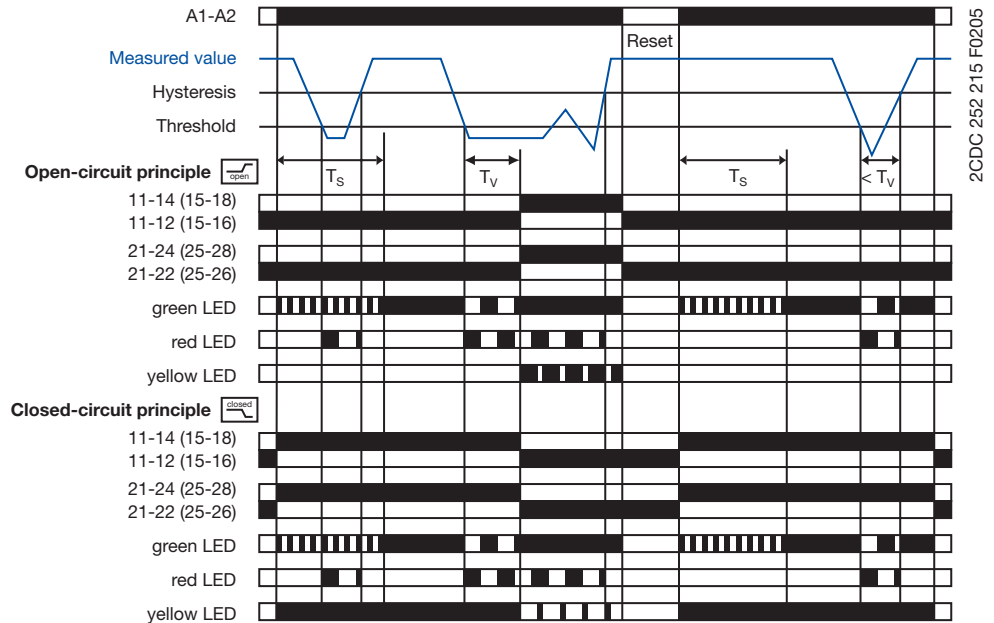
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The current to be monitored (measured value) is applied to terminals **B1/B2/B3-C**. When supply voltage is applied to terminals **A1-A2**, the start-up delay  $T_s$  begins, the output relays energize and the yellow LED (relays energized) glows. The green LED flashes  during the start-up delay  $T_s$  and then turns steady. During the start-up delay  $T_s$  undercurrent is only displayed by flashing  of the red LED.

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If the measured value exceeds the threshold value plus the hysteresis, the red LED turns off. The output relays remain de-energized (latching function). If supply voltage is interrupted (reset), the green and yellow LEDs turn off. The output relays energize again when supply voltage is re-applied.

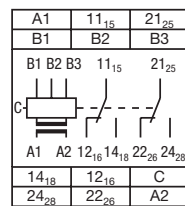


# Measuring and monitoring relays CM-SRS.M

## Multifunctional current monitoring relays, single-phase AC/DC

### Data sheet

#### Connection diagram

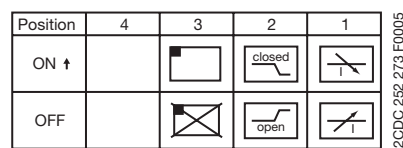


2CDC 252 206 F0005

- A1-A2 Control supply voltage
- B1-C Measuring range 1: CM-SRS.M1: 3-30 mA  
CM-SRS.M2: 0.3-1.5 A
- B2-C Measuring range 2: CM-SRS.M1: 10-100 mA  
CM-SRS.M2: 1-5 A
- B3-C Measuring range 3: CM-SRS.M1: 0.1-1 A  
CM-SRS.M2: 3-15 A

11<sub>15</sub>-12<sub>16</sub>/14<sub>18</sub> Output contacts - open- or closed-circuit principle  
21<sub>25</sub>-22<sub>26</sub>/24<sub>28</sub>

#### DIP switch functions



2CDC 252 273 F0005









- 1 ON Undercurrent monitoring  
OFF Overcurrent monitoring
  - 2 ON Closed-circuit principle  
OFF Open-circuit principle
  - 3 ON Latching function activated  
OFF Latching function not activated
- OFF = Default

# Measuring and monitoring relays CM-SRS.M

## Multifunctional current monitoring relays, single-phase AC/DC

### Data sheet

#### Technical data

Type		CM-SRS.M					
<b>Input circuit - Supply circuit</b>		<b>A1-A2</b>					
Rated control supply voltage $U_s$		24-240 V AC/DC					
Rated control supply voltage tolerance		-15...+10 %					
Rated frequency AC/DC versions		50/60 Hz or DC					
Current / power consumption		24 V DC		115 V AC		230 V AC	
24-240 V AC/DC		30 mA / 0.75 W		17 mA / 1.9 VA		11 mA / 2.6 VA	
On-period		100 %					
Power failure buffering		20 ms					
Transient overvoltage protection		Varistors					
<b>Input circuit - Measuring circuit</b>		<b>B1/B2/B3-C</b>					
Monitoring function		over- or undercurrent monitoring configurable					
Measuring method		RMS measuring principle					
Measuring inputs		CM-SRS.M1			CM-SRS.M2		
Terminal connection		<b>B1-C</b>	<b>B2-C</b>	<b>B3-C</b>	<b>B1-C</b>	<b>B2-C</b>	<b>B3-C</b>
Measuring range		3-30 mA	10-100 mA	0.1-1 A	0.3-1.5 A	1-5 A	3-15 A <sup>2)</sup>
Input resistance		3.3 $\Omega$	1 $\Omega$	0.1 $\Omega$	0.05 $\Omega$	0.01 $\Omega$	0.0025 $\Omega$
Pulse overload capacity $t < 1$ s		500 mA	1 A	10 A	15 A	50 A	100 A
Continuous capacity		50 mA	150 mA	1.5 A	2 A	7 A	17 A
Threshold value		adjustable within the indicated measuring range					
Tolerance of the adjusted threshold value		10 % of the range end value					
Hysteresis related to the threshold value		3-30 % adjustable					
Maximum voltage within measuring circuit		factor 1.5 of full scale					
Measuring signal frequency range		DC / 15 Hz - 2 kHz					
Rated measuring signal frequency range		DC / 50-60 Hz					
Maximum response time		AC: 80 ms, DC: 120 ms					
Measuring error within the control supply voltage tolerance		$\leq 0.5$ %					
Measuring error within the temperature range		$\leq 0.06$ % / °C					
<b>Timing circuit</b>							
Start-up delay $T_s$		0 or 0.1-30 s adjustable					
Tripping delay $T_v$		0 or 0.1-30 s adjustable					
Repeat accuracy (constant parameters)		$\pm 0.07$ % of full scale					
Timing error within control supply voltage tolerance		$\leq 0.5$ %					
Timing error within temperature range		$\leq 0.06$ % / °C					
<b>Indication of operational states</b>							
Control supply voltage U/T: green LED		 : control supply voltage applied  : start-up delay $T_s$ active  : tripping delay $T_v$ active					
Measured value I: red LED		 : overcurrent  : undercurrent					
Relay status R: yellow LED		 : relay energized, no latching function  : relay energized, active latching function  : relay de-energized, active latching function					
<b>Output circuits</b>		<b>11(15)-12(16)/14(18), 21(25)-22(26)/24(28)</b>					
Kind of output		relays, 2 c/o contacts					
Operating principle <sup>1)</sup>		open- or closed-circuit principle configurable					
Contact material		AgNi					
Rated voltage (VDE 0110, IEC 947-1)		250 V					
Minimum switching voltage / minimum switching current		24 V / 10 mA					
Maximum switching voltage / maximum switching current		250 V AC / 4 A AC					
Rated operational current (IEC 60947-5-1)		AC12 (resistive) at 230 V		4 A			
		AC15 (inductive) at 230 V		3 A			
		DC12 (resistive) at 24 V		4 A			
		DC13 (inductive) at 24 V		2 A			
Mechanical lifetime		30x10 <sup>6</sup> switching cycles					
Electrical lifetime (AC12, 230 V, 4 A)		0.1x10 <sup>6</sup> switching cycles					

# Measuring and monitoring relays CM-SRS.M

## Multifunctional current monitoring relays, single-phase AC/DC

### Data sheet

Type		CM-SRS.M
Short-circuit capacity / maximum fuse rating	n/c contact	10 A fast-acting
	n/o contact	10 A fast-acting
<b>General data</b>		
Dimensions (W x H x D)		22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 in)
Mounting		DIN rail (EN 50022)
Mounting position		any
Material of enclosure		PA 6
Degree of protection	enclosure / terminals	IP50 / IP20
<b>Electrical connection</b>		
Wire size	fine-strand with wire end ferrule	2x0.75 mm <sup>2</sup> / 2x2.5 mm <sup>2</sup> (2x18 AWG / 2x14 AWG)
	fine-strand without wire end ferrule	2x0.75 mm <sup>2</sup> / 2x2.5 mm <sup>2</sup> (2x18 AWG / 2x14 AWG)
	rigid	2x0.5 mm <sup>2</sup> / 2x4 mm <sup>2</sup> (2x20 AWG / 2x12 AWG)
Stripping length		8 mm (0.31 in)
Tightening torque		0.8 Nm
<b>Environmental data</b>		
Ambient temperature range	operation	-20...+60 °C
	storage	-40...+85 °C
Damp heat (IEC 60068-2-30)		55 °C, 6 cycles
Vibration (sinusoidal) (IEC/EN 60255-21-1)		Class 2
Shock (IEC/EN 60255-21-2)		Class 2
<b>Isolation data</b>		
Insulation voltage (VDE 0110, IEC 947-1, IEC/EN 60255-5)	supply circuit / measuring circuit	600 V
	supply circuit / output circuit	250 V
	measuring circuit / output circuit	600 V
	output circuit 1 / output circuit 2	250 V
Pollution degree (VDE 0110, IEC 664, IEC/EN 60255-5)		2
Overvoltage category (VDE 0110, IEC 664, IEC/EN 60255-5)		III
Test voltage between all isolated circuits (type test)	Rated insulation voltage 250 V	2.0 kV, 50 Hz
	Rated insulation voltage 600 V	2.5 kV, 50 Hz
<b>Standards</b>		
Product standard		IEC 255-6, EN 60255-6
Low Voltage Directive		2006/95/EC
EMC Directive		2004/108/EC
<b>Electromagnetic compatibility</b>		
Interference immunity	IEC/EN 61000-6-2	
	electrostatic discharge (ESD)	IEC/EN 61000-4-2 - Level 3
	electromagnetic field	IEC/EN 61000-4-3 - Level 3
	fast transients (Burst)	IEC/EN 61000-4-4 - Level 3
	powerful impulses (Surge)	IEC/EN 61000-4-9 - Level 3
	HF line emission	IEC/EN 61000-4-6 - Level 3
Interference emission	IEC/EN 61000-6-3	
	electromagnetic field	IEC/CISPR 22; EN 55022 - Class B
	HF line emission	IEC/CISPR 22; EN 55022 - Class B

<sup>1)</sup> Open-circuit principle: output relays energize if the measured value exceeds  $\overline{\square}$  / falls below  $\underline{\square}$  the adjusted threshold value  
Closed-circuit principle: output relays de-energize if measured value exceeds  $\overline{\square}$  / falls below  $\underline{\square}$  the adjusted threshold value

<sup>2)</sup> In case of measured currents > 10 A, lateral spacing has to be min. 10 mm

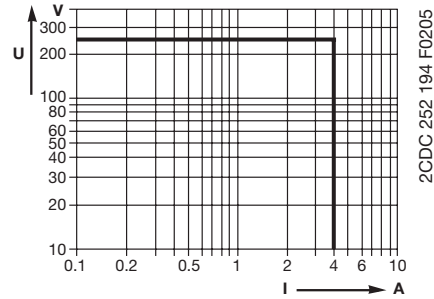
# Measuring and monitoring relays CM-SRS.M

## Multifunctional current monitoring relays, single-phase AC/DC

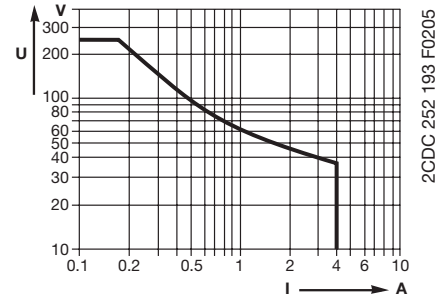
### Data sheet

#### Technical diagrams

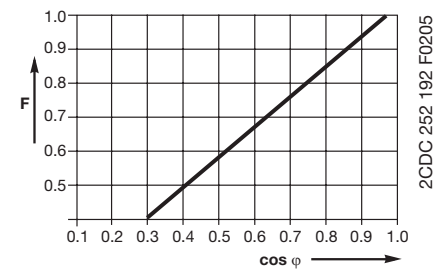
##### Load limit curves



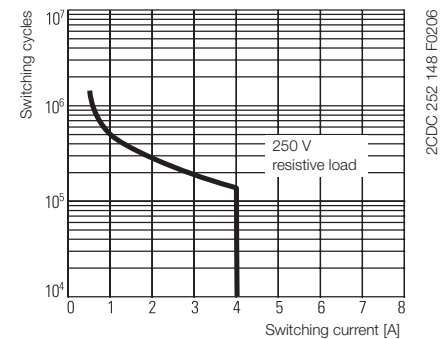
AC load (resistive)



DC load (resistive)



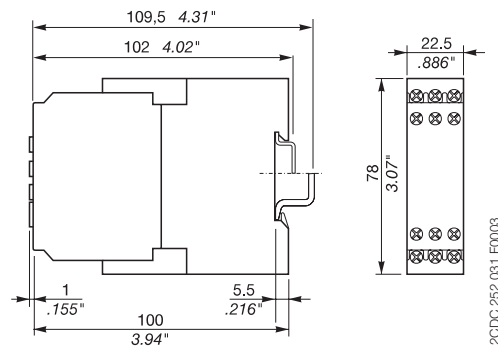
Derating factor F for inductive AC load



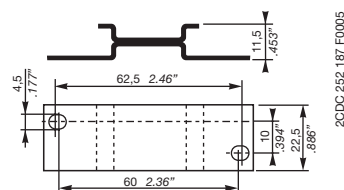
Contact lifetime

#### Dimensional drawing

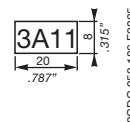
Dimensions in mm



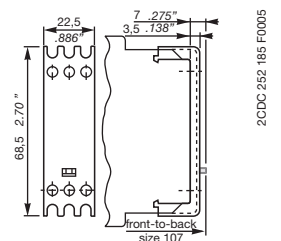
#### Dimensional drawings (Accessories)



ADP.01 - Adapter for screw mounting



MAR.01 - Marker label



COV.01 - Sealable transparent cover



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